

SPEC SHEET

Digital Indicating pH Meter

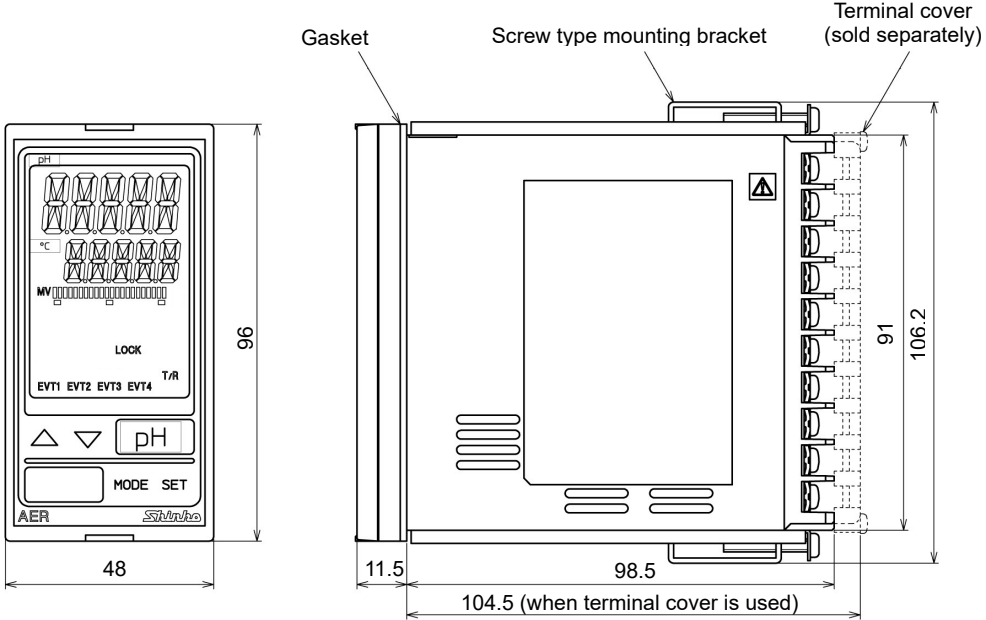
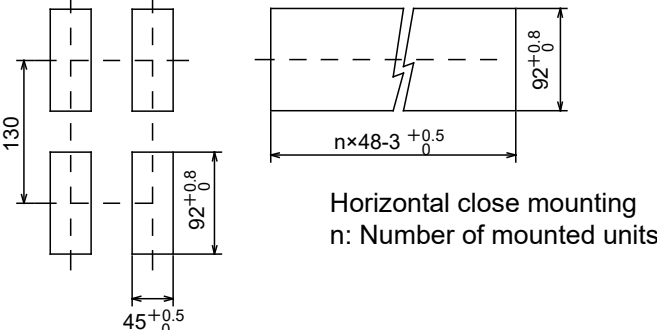
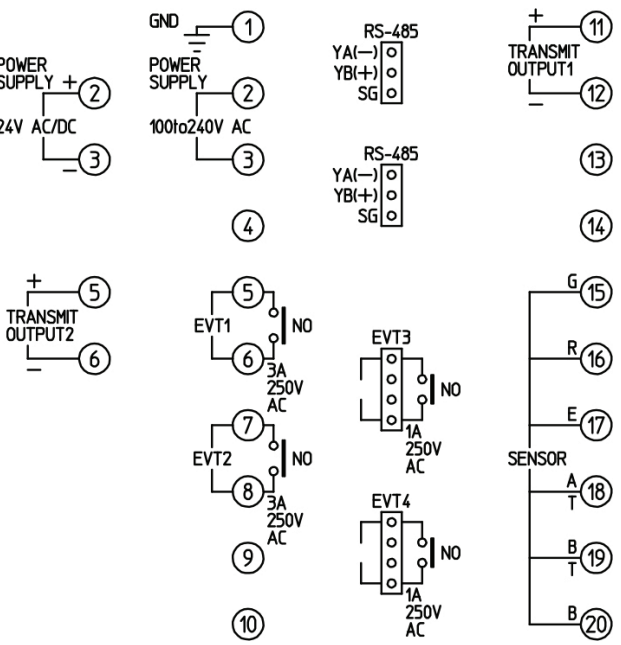
AER-102-PH

- 48 x 96 mm, panel mounting type
- Drip-proof/Dust-proof IP66 (for front panel only)
- Power supply 24 V AC/DC (user-specified)
- 2-points Contact output (standard), additional 2 points (optional)
- Proportional control, max. 4 points of relay contact
- Various settings & calibration via software communication (RS-485) (optional)
- Cleansing output function
- Transmission output 2 (optional)



Name	Digital indicating pH meter																																										
Model	<table border="1"> <tr> <td>AER - 1 0</td> <td>2</td> <td>-PH</td> <td><input type="checkbox"/></td> <td>,</td> <td><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></td> </tr> <tr> <td>Input points</td> <td>2</td> <td></td> <td></td> <td></td> <td>2 points (pH, temperature)</td> </tr> <tr> <td rowspan="2">Input</td> <td rowspan="2">PH</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>pH combined electrode sensor</td> </tr> <tr> <td>Pt spec (*1)</td> <td>Pt1000 Pt100</td> </tr> <tr> <td rowspan="2">Power supply voltage</td> <td rowspan="2">1</td> <td rowspan="2"></td> <td rowspan="2"></td> <td rowspan="2"></td> <td>100 to 240 V AC (standard)</td> </tr> <tr> <td>24 V AC/DC (*2)</td> </tr> <tr> <td rowspan="3">Option</td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td rowspan="3"></td> <td>C5</td> <td>Serial communication RS-485</td> </tr> <tr> <td>EVT3</td> <td>EVT3, EVT4 outputs (Contact output 3, 4)</td> </tr> <tr> <td>TA2</td> <td>Transmission output 2 (*3)</td> </tr> </table> <p>(*1) This input temperature specification was specified at the time of ordering. (*2) Power supply voltage 100 to 240 V AC is standard. When ordering 24 V AC/DC, enter 1 in Power supply voltage, after 'PH'. (*3) If Transmission output 2 (TA2 option) is ordered, EVT1 is not available.</p>					AER - 1 0	2	-PH	<input type="checkbox"/>	,	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Input points	2				2 points (pH, temperature)	Input	PH				pH combined electrode sensor	Pt spec (*1)	Pt1000 Pt100	Power supply voltage	1				100 to 240 V AC (standard)	24 V AC/DC (*2)	Option					C5	Serial communication RS-485	EVT3	EVT3, EVT4 outputs (Contact output 3, 4)	TA2	Transmission output 2 (*3)
AER - 1 0	2	-PH	<input type="checkbox"/>	,	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																																						
Input points	2				2 points (pH, temperature)																																						
Input	PH				pH combined electrode sensor																																						
					Pt spec (*1)	Pt1000 Pt100																																					
Power supply voltage	1				100 to 240 V AC (standard)																																						
					24 V AC/DC (*2)																																						
Option					C5	Serial communication RS-485																																					
					EVT3	EVT3, EVT4 outputs (Contact output 3, 4)																																					
					TA2	Transmission output 2 (*3)																																					
Measurement range	pH value: pH 0.00 to 14.00 Resolution: pH 0.01 Temperature: 0.0 to 100.0°C Resolution: 0.1°C																																										
Repeatability	pH value: pH ±0.05																																										
Linearity	pH value: pH ±0.05																																										
Indication accuracy	Temperature: ±1°C																																										
Calibration function	2-points Automatic or Manual calibration 2-points Automatic calibration: Automatic electrode quality evaluation Standard solution type: pH 2, 4, 7, 9, 10 (JIS) Combination of standard solution: pH7 (1st solution) and any 2nd solution Manual calibration: 2 types of solution with a difference of 2 pH or more Temperature calibration (1 point)																																										
Contact output	Relay contact 1a Control capacity: 3 A 250 V AC (Resistive load), 1 A 250 V AC (Inductive load, cosφ=0.4) Electrical life: 100,000 cycles, Output action: P control, ON/OFF control																																										
Transmission output 1	Converting pH, temperature or MV to analog signal every input sampling period, outputs the value in current. (Factory default: pH) However, if 'No Temperature Compensation' is selected in [Electrode RTD], and if 'Temperature transmission' is selected, the value set in [Reference temperature] will be output. If Transmission output 1 high limit and low limit are set to the same value, Transmission output 1 will be fixed at 4 mA DC. Transmission output can be indicated with the bar graph. Resolution: 12000, Output: 4 to 20 mA DC (Load resistance: Max. 550 Ω) Output accuracy: Within ±0.3% of Transmission output 1 span																																										
Self-diagnosis	The CPU is monitored by a watchdog timer, and if an abnormal status occurs, the instrument is switched to warm-up status.																																										
Temperature compensation range	0.0 to 100.0°C																																										
Ambient temperature	0 to 50°C (32 to 122°F)																																										
Ambient humidity	35 to 85 %RH (Non-condensing)																																										

Power supply (user-specified)	AER-102-PH: 100 to 240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC AER-102-PH 1: 24 V AC/DC 50/60 Hz Allowable fluctuation range: 20 to 28 V AC/DC																																										
Structure	Flush (Applicable panel thickness: 1 to 8 mm) Case: Flame-resistant resin, Color: Black Front panel: Membrane sheet Drip-proof/Dust-proof: IP66 (for front panel only)																																										
Protection structure	Overvoltage category II, Pollution degree 2 (IEC61010-1)																																										
Safety standards	RoHS directive compliant																																										
Dimensions	W48 x H96 x D110 mm, Case depth: 98.5 mm (when mounted through a control panel)																																										
Weight	Approx. 280 g																																										
Serial communication [C5 option]	<p>The following operations can be carried out from an external computer.</p> <p>(1) Reading and setting of various set values (2) Reading of pH, temperature and status (3) Function change and adjustment (4) Reading and setting of user save area</p> <table border="1"> <tr> <td>Cable length</td> <td>1.2 km (Max), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)</td> </tr> <tr> <td>Communication line</td> <td>EIA RS-485</td> </tr> <tr> <td>Communication method</td> <td>Half-duplex communication</td> </tr> <tr> <td>Communication speed</td> <td>9600, 19200, 38400 bps (Selectable by keypad)</td> </tr> <tr> <td>Synchronization method</td> <td>Start-stop synchronization</td> </tr> <tr> <td>Code form</td> <td>ASCII, Binary</td> </tr> <tr> <td>Communication protocol</td> <td>Shinko protocol, MODBUS ASCII, MODBUS RTU (Selectable by keypad)</td> </tr> <tr> <td>Data bit/parity</td> <td>8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even, 8-bits/Odd, 7-bits/Odd (Selectable by keypad)</td> </tr> <tr> <td>Stop bit</td> <td>1, 2 (Selectable by keypad)</td> </tr> <tr> <td>Error correction</td> <td>Command request repeat system</td> </tr> <tr> <td>Error detection</td> <td>Parity check, Checksum (Shinko protocol), LRC (MODBUS protocol ASCII), CRC-16 (MODBUS protocol RTU)</td> </tr> </table> <p>Data Format</p> <table border="1"> <thead> <tr> <th>Communication Protocol</th> <th>Shinko Protocol</th> <th>MODBUS ASCII</th> <th>MODBUS RTU</th> </tr> </thead> <tbody> <tr> <td>Start bit</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>Data bit</td> <td>7</td> <td>7 (8) (Selectable)</td> <td>8</td> </tr> <tr> <td>Parity</td> <td>Even</td> <td>Even (No parity, Odd) (Selectable)</td> <td>No parity (Even, Odd) (Selectable)</td> </tr> <tr> <td>Stop bit</td> <td>1</td> <td>1 (2) (Selectable)</td> <td>1 (2) (Selectable)</td> </tr> </tbody> </table>	Cable length	1.2 km (Max), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)	Communication line	EIA RS-485	Communication method	Half-duplex communication	Communication speed	9600, 19200, 38400 bps (Selectable by keypad)	Synchronization method	Start-stop synchronization	Code form	ASCII, Binary	Communication protocol	Shinko protocol, MODBUS ASCII, MODBUS RTU (Selectable by keypad)	Data bit/parity	8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even, 8-bits/Odd, 7-bits/Odd (Selectable by keypad)	Stop bit	1, 2 (Selectable by keypad)	Error correction	Command request repeat system	Error detection	Parity check, Checksum (Shinko protocol), LRC (MODBUS protocol ASCII), CRC-16 (MODBUS protocol RTU)	Communication Protocol	Shinko Protocol	MODBUS ASCII	MODBUS RTU	Start bit	1	1	1	Data bit	7	7 (8) (Selectable)	8	Parity	Even	Even (No parity, Odd) (Selectable)	No parity (Even, Odd) (Selectable)	Stop bit	1	1 (2) (Selectable)	1 (2) (Selectable)
Cable length	1.2 km (Max), Cable resistance: Within 50 Ω (Terminators are not necessary, but if used, use 120 Ω or more on both sides.)																																										
Communication line	EIA RS-485																																										
Communication method	Half-duplex communication																																										
Communication speed	9600, 19200, 38400 bps (Selectable by keypad)																																										
Synchronization method	Start-stop synchronization																																										
Code form	ASCII, Binary																																										
Communication protocol	Shinko protocol, MODBUS ASCII, MODBUS RTU (Selectable by keypad)																																										
Data bit/parity	8-bits/No parity, 7-bits/No parity, 8-bits/Even, 7-bits/Even, 8-bits/Odd, 7-bits/Odd (Selectable by keypad)																																										
Stop bit	1, 2 (Selectable by keypad)																																										
Error correction	Command request repeat system																																										
Error detection	Parity check, Checksum (Shinko protocol), LRC (MODBUS protocol ASCII), CRC-16 (MODBUS protocol RTU)																																										
Communication Protocol	Shinko Protocol	MODBUS ASCII	MODBUS RTU																																								
Start bit	1	1	1																																								
Data bit	7	7 (8) (Selectable)	8																																								
Parity	Even	Even (No parity, Odd) (Selectable)	No parity (Even, Odd) (Selectable)																																								
Stop bit	1	1 (2) (Selectable)	1 (2) (Selectable)																																								
EVT3, EVT4 outputs (Contact output 3, 4) [EVT3 option]	Same as Contact output.																																										
Transmission output 2 [TA2 option]	<p>Converting pH, temperature or MV to analog signal every input sampling period, outputs the value in current.</p> <p>(Factory default: Transmission output 1: pH, Transmission output 2: Temperature)</p> <p>If 'No temperature compensation' is selected in [Electrode RTD], and if 'Temperature transmission' is selected, the value set in [Reference temperature] will be output.</p> <p>If Transmission output 2 high limit and low limit are set to the same value, Transmission output 2 will be fixed at 4 mA DC. Transmission output can be indicated with the bar graph.</p> <p>Resolution: 12000</p> <p>Current: 4 to 20 mA DC (Load resistance: Max. 550 Ω)</p> <p>Output accuracy: Within ±0.3% of Transmission output 2 span</p>																																										

<p>Dimensions (Scale: mm)</p>	
<p>Panel cutout (Scale: mm)</p>	 <p>Horizontal close mounting n: Number of mounted units</p>
<p>Terminal arrangement</p>	 <p> GND: Ground terminal (①) POWER SUPPLY: Power terminals(②-③) EVT1: EVT1 output terminals (Contact output 1) (⑤-⑥) EVT2: EVT2 output terminals (Contact output 2) (⑦-⑧) TRANSMIT OUTPUT1: Transmission output 1 terminals (⑪-⑫) G, R: Electrode sensor terminals (⑮-⑯) E: Shield wire terminal (⑰) T, T: Temperature compensation sensor terminals Cu500 (⑱-⑲) A, B: Temperature compensation sensor terminals Pt100 (2-wire type), Pt1000 (⑱-⑲) A, B, B: Temperature compensation sensor terminals Pt100 (3-wire type) (⑱-⑲-⑳) When C5 option is ordered: RS-485: Serial communication 2 connectors are wired internally. When EVT3 option is ordered: EVT3: EVT3 output (Contact output 3) EVT4: EVT4 output (Contact output 4) When TA2 option is ordered: TRANSMIT OUTPUT2: Transmission output 2 terminals (⑤-⑥) </p>